Itron automatic meter reading battery life

Paul Rako - May 24, 2007

My article on wireless machine-to-machine networks comes out June 7th. One of the things that I am concerned about is the claim about long battery life in Zigbee and other systems. As a musician that has had to keep condenser mics and stomp boxes running, I have learned to really hate anything that has batteries in it. It seems like the more important the gig, the more certain the battery will fail. If you are a working musician with a decent income you can do what we did back in Detroit—put new batteries in everything before each performance. We also removed the batteries right away so that they could not leak and cause other problems.

Well I finally stumbled across some real-world battery replacement data from Itron, an electric, gas, and water meter manufacturer. It is not based on projections; it is based on real-world experience at the city of Wichita. The city says that it costs about 50 bucks an hour to have a field rep changing batteries. If they can get to the module and change one every 15 minutes that is 32 batteries a day. Add in the costs of the trucks, the batteries themselves, and then the costs approach 20 bucks a meter. So if your wireless network has 1000 nodes be sure you have budgeted 20 grand for the battery replacement and be darn sure that the actual life of the batteries is closer to the 10 year claims of the manufacture and not 2 or 5 years.

I guess another bad experience with batteries was my electric car. I built it using a 9 inch advanced DC motor and Curtis controller retrofit into an old 1975 Honda Civic. Even with the high cost of electricity in California the car was dirt-cheap to drive. Until I needed a new battery pack. After only a year. About 3 grand. Ouch. I parted the car out and kept the motor and controller.

The Itron meter batteries seem to be lasting 15 or even 20 years so it can be done, but that is using ER17/50 3.3 amp-hour lithium batteries (pdf). They cost 18 bucks each for the 2.7 Ah versions. Also, that is when the meter is queried by a reader to transmit. If the meter just transmits every three seconds then the battery life goes down to ten years. One model puts in two and switches between them. I don’t mean to be too negative about batteries; after all, we all have them in our watches and don’t give them second thought. The batteries in my REX 6000 PDA are a little more troublesome. The battery in my pager seems to constantly go dead. The reality of your battery operated system will be somewhere in between “not giving it a second thought” and “oh darn, not again…”

[Update] A concerned reader wrote me to point out that automated electronic meters are causing problems in Houston. I read the article carefully and it is not really clear if Itron’s meters are part of the problem or if Itron meters worked great and now they have to replace badly designed meters from another vendor. In any event it highlights the difficulty of relying on batteries for anything. That link had a link to another article about difficulty in maintaining wireless networks, which is going to be one of the points on my next article about M2M wireless (machine to machine).